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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,680	02/13/2004	Nobuyuki Eto	Q79867	5870

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EXAMINER	
LAZORCIK, JASON L	
ART UNIT	**PAPER NUMBER**
1731	

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/777,680	ETO ET AL.	
	Examiner	Art Unit	
	Jason L. Lazorcik	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☒ Claim(s) *5-6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/13/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 5-6 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically, Claim 5 is drawn to a method of manufacturing the glass substrate using the process method of the parent Claim 1. It is unclear how a claim drawn to using the process in Claim 1 further limits said process.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the smallest ion radius of the smallest alkali ion among the alkali ions contained in the glass substrate" in lines4-5. There is insufficient antecedent basis for this limitation in the claim.

The term "within a range" in claim 4, line 2 is a relative term which renders the claim indefinite. The term "within a range" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Specifically since the designated range is unbounded upon the lower end, the stated limitation of "within a range of" is rendered unclear and indefinite. Therefore the indicated limitation is hereby interpreted to mean "approximately", and the claim is interpreted to read as "..., wherein: the glass substrate has a thickness ~~within a range of~~ of approximately 0.6mm or less".

Claim 5 recites a method of manufacturing "the glass substrate" however, it is unclear to which "the glass substrate" the applicant intends to refer. Specifically, it is unclear which stage of the processing of a glass substrate the applicant is intending to as the antecedent for the immediate claim (e.g. before, during or between one of the recited steps, or after the method of processing a glass substrate as recited in Claim 1).

Claim 6 is rejected under 35 USC § 112 on the same grounds as set forth in the rejection of Claim 5 above. Specifically, it is unclear to which "the glass substrate" the applicant is referring.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 1-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 6,119,483) in view of Aratani (US 4,671,814). Briefly, Takahashi teaches a method for processing a glass substrate for use as a magnetic disk.

With respect to Claims 1 and 2, Takahashi teaches that the glass substrate used for manufacturing a magnetic disk, after completion of grinding, polishing, and washing steps is subjected to a chemical reinforcement step. According to this process, " the glass substrate which had been washed was heated in advance to 300°C, and immersed for about 3 hours in a chemical reinforcement solution preliminarily heated to 400°C, said solution having been prepared by mixing potassium nitrate (60%) and sodium nitrate (40%)". Further, the reference indicates that "When the glass substrate is immersed in the chemical reinforcement solution, lithium ions and sodium ions on the surface layer of the glass substrate are substituted by sodium ions and potassium ions in the chemical reinforcement solution, respectively, whereby the glass substrate is reinforced" (Column 10, Lines 50-67).

The immediate disclosure is understood to provide a method for processing a glass substrate for a magnetic disk wherein the glass substrate contains alkali ions (lithium and sodium ions) on the surface layer of the glass substrate. The process using a first alkali ion (sodium) present as a molten salt of sodium nitrate and having a first ion radius greater than the smallest ion radius of the smallest alkali ion (lithium) among the alkali ions contained in the glass substrate. The process further uses a second alkali

ion (potassium) present as a molten salt of potassium nitrate for supplying the second alkali ion.

With respect to Claim 3, the immediate reference teaches that an aluminosilicate glass to be used for chemical reinforcement contains as principle components 57 to 74% SiO_2,...3 to 15% of Al_2O_3, 7 to 16% of Li_2O and 4 to 14% of Na_2O, each in terms of mole percent" (Column 9, Lines 25-31). The reference continues with a preferred example of ~67% SiO_2, ~1% ZnO_2, ~9%Al_2O_3, ~12%Li_2O and ~10%Na_2O, each in terms of mole %. The cited example composition for the aluminosilicate glass reads directly upon the claimed concentration ranges for each constituent.

Regarding Claim 4, the reference indicates a disk thickness of 1.5 mm which reads on the claimed glass substrate thickness "within a range of 0.6mm or less". More specifically, where "within a range of" is interpreted to mean "approximately" and 1.5mm is understood as "approximately" 0.6 mm or less, then the disclosed glass disk thickness of 1.5 mm is understood to read on the claimed disk thickness of "within a range of 0.6mm or less".

With respect to Claim 5, Takahashi teaches that the method of processing a glass substrate or the "chemical reinforcement step" is used in a method of manufacturing a magnetic glass substrate (see Example 1) or "a method of manufacturing the glass substrate" as claimed.

With respect to Claim 6, Takahashi indicates that "the magnetic disk is produced by forming a thin film such as a magnetic layer on a substrate and as the substrate for it,...(a) glass substate has been employed" (Column 1, Lines 21-23)

Takahashi teaches that the treatment process as indicated above proceeds by a single dip in a molten solution or mixture of potassium nitrate (60%) and sodium nitrate (40%). As such Takahashi fails to explicitly set forth a scenario wherein the processing of the glass substrate is effected by the use of a first ion alkali ion and ***subsequently*** processing the substrate by the use of a second alkali ion. It is here understood that the disclosed immersion in a molten mixture or solution of the two alkali ions does not anticipate the claimed process indicating a discrete first process step and a discrete ***subsequent*** second step.

Aratani teaches a method for strengthening a glass substrate having a thickness of about 1.0mm by chemical strengthening. As set forth in Example 1 (Column 8, Lines 39-53), the immediate reference teaches that,

> "The sample disks were immersed in a bath of molten sodium nitrate...The sample disks taken up from the bath were left to cool down and were washed with water to remove adherent sodium nitrate and dried.
> After the above treatment with sodium nitrate, all the sample disks were immersed in a bath of molten potassium nitrate....The samples taken up from the molten potassium were left to cool down, washed and dried."

The Aratani disclosure clearly sets forth a two step process wherein a glass substrate is process with a first alkali ion of a first molten salt containing sodium nitrate and followed with a subsequent treatment using a second alkali ion of a second molten salt containing potassioum nitrate. Aratani teaches that thin float glass substrates tend to severely warp during chemical tempering or strengthening and that "the principle cause of such warping is presumed to be diffusion of tin, or an alternate metal, used as the molten metal in the float process into the glass surface which is in contact with the

surface of the molten metal bath" (column 1, Lines61-68). The reference further indicates that the two step treatment "is remarkably effective for suppression of warping of float glass by ion exchange strengthening treatment" (Column 3, Lines 16-47). It would have therefore been obvious to one of ordinary skill in the art at the time of the invention to modify the single mixture (60% potassium nitrate/40% sodium nitrate) chemical strengthening process set forth by Takahashi with the two step process as taught by Aratani. This modification would have been obvious to one of ordinary skill seeking to minimize the degree and severity of warping in a planar float glass substrate incurred during the chemically strengthening process.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL

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